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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/623,011	07/17/2003	Yasushi Kojima	NGW-009 RCE	4612
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LAHIVE & COCKFIELD, LLP ONE POST OFFICE SQUARE BOSTON, MA 02109-2127			EXAMINER LEE, CYNTHIA K	
			ART UNIT 1795	PAPER NUMBER
			MAIL DATE 01/18/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/623,011

Applicant(s)

KOJIMA ET AL.

Examiner

Cynthia Lee

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 October 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4,5,7 and 8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,5,7 and 8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date: _____ | 6) <input type="checkbox"/> Other: _____ |

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/30/2007 has been entered.

Response to Amendment

This Office Action is responsive to the amendment filed on 10/30/2007. Claims 1,2,4,5,7,8 are pending. Claims 1 and 4 have been amended.

Claims 1,2,4,5,7,8 are rejected for reasons stated herein below.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 2, and 7 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The limitation in claim 1 "a control unit programmed to determine an abnormal state of the fuel cell" is not supported by the disclosure as originally filed (emphasis added). The Specification supports "an

abnormal state determining unit" but does not disclose that the unit is a programmed unit, nor a control unit. Applicant is advised to point out specifically in the Specification for support.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-8 are rejected under 35 U.S.C. 103(a) as obvious over Boehm (US 6461751) in view of Okamoto (US 2001/0014414) and Tajima (US 4904548).

Boehm discloses a method and an apparatus for operating a fuel cell. Boehm discloses a hydrogen sensor that comprises monitoring a cathode exhaust stream downstream of the cathode to detect hydrogen gas concentration (104 in fig. 1) (applicant's hydrogen sensor) and decreasing oxidant stoichiometry (applicant's protecting unit) when the hydrogen gas concentration is less than a threshold concentration (applicant's memory unit and abnormal state determining unit). (5:1-20) (applicant's claims 1 and 4).

Boehm also discloses that the oxidant stream mass flow rate is compared to a maximum desired mass flow rate; and if the oxidant stream mass flow rate is less than the desired flow rate, the device includes increasing the oxidant flow rate (5:45-52), thus

causing a difference in the supply flow rate of the reaction gases (abnormal state determining unit) (claim 1). Boehm does not disclose a programmed controller to compare the oxidant stream mass flow rate with the maximum desired mass flow rate. However, it has been held that broadly providing a mechanical or automatic means to replace manual activity which has accomplished the same result involves only routine skill in the art. *In re Venner*, 120 USPQ 192.

The controller 105 (applicant's operating state detecting unit) controls the electric motor to control the mechanical device that delivers the oxidant supply stream (10:40-45). Boehm's system also comprises decreasing the pressure of the fuel stream when the system detects that the hydrogen gas concentration is increasing (6:33-40), thus causing a difference in the pressure between the reaction gases at the anode and the cathode. (Applicant's claims 3, 7, and 8)

Boehm discloses that when the hydrogen gas concentration is less than a first threshold concentration, the oxidant supply is decreased. Likewise, when the hydrogen gas concentration is higher than a second threshold, the oxidant supply is increased accordingly. This is indicative of actual or potential oxidant starvation (5:5-10). The Examiner notes that Boehm's hydrogen sensor inherently functions "wherein the determination threshold value decreases when a loaded state of the fuel cell decreases" because the hydrogen concentration would naturally increase/decrease as the fuel cell's performance increases/decreases. Thus, the hydrogen threshold concentration would be based on either the first or the second threshold value depending on the current hydrogen concentration. As the loaded fuel cell state decreases, the hydrogen

concentration would naturally decrease and would depend on the first threshold concentration should the hydrogen concentration fall below the first threshold concentration.

Boehm discloses an operating state detecting unit, but does not disclose a pressure detector and a flow rate detector (claims 1 and 4). Boehm discloses of regulating the oxidant and fuel stream pressure, or the oxidant stream mass flow rate, to determine the presence of hydrogen in the oxidant stream (7:1-20). Okamoto teaches a pressure detector for the anode and cathode gas inlets 38 and 54 and flow rate detector for the anode and cathode gas inlets 34 and 48 (see fig. 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to add pressure detectors and flow rate detectors at the anode and cathode inlets for the benefit of being able to control the reactant stream pressure as desired by Boehm. It would have been obvious to one of ordinary skill in the art at the time the invention was made to add flow rate detectors at the anode and cathode inlets for the benefit of detecting the flow the reactant gas entering the fuel cell.

Boehm discloses an operating state detecting unit, but does not disclose a current controller (claims 1 and 4). Tajima teaches of detecting and controlling the output current of the fuel cell. It would have been obvious to one of ordinary skill in the art at the time the invention was made to add a current controller to the fuel cell system of Boehm for the benefit of monitoring the performance of the fuel cell.

Response to Arguments

Applicant's arguments filed 10/30/2007 have been considered but are moot in view newly cited prior arts Okamoto (US 2001/0014414) and Tajima (US 4904548).

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cynthia Lee whose telephone number is 571-272-8699. The examiner can normally be reached on Monday-Friday 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Susy Tsang-Foster can be reached on 571-272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ckl

Cynthia Lee


RAYMOND A. ALEX
PRIMARY EXAMINER